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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,473	12/10/2001	Mehrdad Ziari	P1194 US	4571

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EXAMINER

STRECKER, GERARD R

ART UNIT	PAPER NUMBER
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2862

DATE MAILED: 06/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/016,473

Applicant(s)

ZIARI ET AL.

Examiner

Gerard Strecker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-67 is/are pending in the application.
- 4a) Of the above claim(s) 55-67 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other: ____

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Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-54, drawn to an optical connection module, classified in class 385, subclass 92.
- II. Claims 55-62, drawn to a method of fabricating an optical connection module, classified in class 438, subclass 27.
- III. Claims 63-67, drawn to a method of fabricating an optical connection module, classified in class 438, subclass 27.

The inventions are distinct, each from the other because:

Inventions II, III and invention I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by materially different processes as evidenced by the different processes of Groups II and III.

Groups II and III are distinct in that they require different techniques for creating a thermally insulating material in a region of the substrate, namely, in Group II a thermally insulating material is anodically bonded in the region whereas in Group III a thermally insulating region is formed in said region using flame hydrolysis.

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Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Phillip Conrad on 6/5/03 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-54. Affirmation of this election must be made by applicant in replying to this Office action. Claims 55-67 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

In view of the papers filed 2/19/03, it has been found that this nonprovisional application, as filed, through error and without deceptive intent, improperly set forth the inventorship, and accordingly, this application has been corrected in compliance with 37 CFR 1.48(a). The inventorship of this application has been changed by adding inventors Donald C. Hargreaves and Harrison L. Ransom.

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The disclosure is objected to because of the following informalities: On page 9; after the detailed description of fig. 3 and before the description of Fig. 6A beginning at line 14, there is no description of Figs. 4 and 5.

Appropriate correction is required.

Claims 1-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 22 and 37, it is not clear how the laser is positioned with respect to the optical component. In claim 4, "said fiber bonding pad" (lines 1, 2) has no antecedent basis. In claims 7, 8, 14, 24, 25, 31, 40, 41 and 47, it is not clear of what the various layers are made. Further, in claims 1 and 22, it is not clear how the laser that is attached to the laser submount is related to the first laser.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blonder et al (5,307,434, cited in Applicant's IDS), hereinafter Blonder, in view of Jin et al (6,205,364), hereinafter Jin, or Auracher et al (6,271,049) hereinafter Auracher.

Blonder discloses (Figs. 1, 2) an optical connection module for attaching an optical component to a substrate and aligning said optical component to a first laser, comprising: a substrate (11), a fiber submount (12) that is attached to said substrate and that includes a thermally insulating material (SiO₂, col. 2, line 66) having an exemplary thickness of 20 micrometers (col., line 66); an optical component (fiber 16) that is soldered (solder layer 174, Fig. 2) to said fiber submount; and a laser (13) located on said substrate. A fiber bonding pad (172-173) is located between the thermally insulating material 12 and the optical fiber component 16. Blonder's bonding pad is situated on a strip heater 171 for melting the solder. Thus, the optical fiber is soldered to the substrate using the heat from the strip heater rather than the heat from a second laser as recited in independent claims 1 and 22 and dependent claim 38.

Jin discloses (Figs. 1A, 1B) an optical connection module comprising: a substrate 18, a submount (14, 17; 20) attached to said substrate; an optical component (13, 19) soldered to said submount; a laser submount (12) attached to said substrate; and a first laser (11) attached to said laser submount. As shown in Fig. 1B (col. 4, lines 49-54) the optical component can be soldered using a heat source such as a laser (which would be a second laser).

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Auracher discloses an optical connection module (Figs. 1 and 2) in which optical components (9, 10, e.g.) are soldered to a submount (2) using the heat supplied from a laser (col. 2, lines 40-46 and col. 5, lines 23-46).

It would have been obvious to one skilled in the art, at the time of the invention, to modify the connection module construction of Blonder by using a laser to melt the solder, rather than a strip heater, as taught by Jin and Auracher. Such modification would eliminate the need for a strip heater and its accompanying current source connections, thus simplifying and speeding up the manufacturing process.

With respect to the recitation in independent claims 1, 22 and 37, that the fiber submount thermally insulating material has a thickness greater than 20 micrometers, as noted above, Blonder's material is selected to be 20 micrometers as an example of a relatively thick (col. 2, line 66) submount layer. It would have been obvious to one skilled in the art to make the submount material greater than 20 micrometers if additional thermal insulation is desired.

Claims 1 and 22 recite that the laser is mounted on a submount. Multi-layer metallization layer 14 of Blonder (col. 3, lines 1-6) may be characterized as a submount for laser 13. Even if such characterization is unwarranted, it would have been obvious to provide laser 13 with a submount, as taught by Jin (col. 3, last line-col. 4, line 1), for the purpose of thermal management.

With respect to various of the dependent claims which recite a bonding pad including two, three or four layers made of various materials (AU, Pt, Ti, etc) and a solder selected from a group

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including AuSn, it is noted that Blonder teaches at col. Lines 1-6, that bonding of the solder (AuSn, for example) may be improved using three-layer stacks such as Ti Pt Au. In view of such teaching it would have been obvious to one skilled in the art to select any number of layers and materials to make up the bonding pad, depending on the extent to which the bonding and thermal insulation are desired to be perfected, considering cost and time required for manufacture. Such considerations would also be involved in the particular technique used for forming or attaching the thermally insulating material. Obviously, Blonder's connection module could be used to mount components other than fibers.

Claims 1, 2 and 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaguchi et al (4, 523,802), hereinafter Sakaguchi, in view of Jin et al or Auracher et al.

Sakaguchi discloses (Figs. 3-5) a fiber-coupled laser optical connection module for attaching an optical component to a substrate and aligning said optical component with a laser, comprising: a substrate 5; a fiber submount 8 that is attached to said substrate and that includes a thermally insulating material (silica glass, col. 3, lines 8-10) having a thickness h_3 greater than 20 micrometers (col. 3, lines 18-20); an optical component (optical fiber 3) that is soldered (col. 2, lines 3-6 and col. 4, lines 66-68) to said fiber submount using heat; a laser submount (2, or 2, 9) made of diamond attached to said substrate; and a laser 1 attached to said laser submount. Sakaguchi et al does not reveal how the heat is applied to solder the fiber to the submount.

Jin et al and Auracher et al are discussed above.


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It would have been obvious to one skilled in the art to employ a laser in conjunction with the module of Sakaguchi et al for soldering the fiber to the submount, as taught by Jin et al and Auracher et al, to provide a rapid, cost effective technique for carrying out the soldering function.

Any inquiry concerning this communication should be directed to G. R. Strecker at telephone number (703) 305-4937.

G R STRECKER/pj

06/23/03


GERARD R. STRECKER
PRIMARY EXAMINER